ATSU interactive computing
The Newsletter of The Association of Time Sharing Users

PRESS REVIEW

The following articles are reprinted solely as items of interest for the independent evaluation by members of ATSU. The opinions, statements of fact, and conclusions expressed herein are not those of the Association.

CRTs Cause of Editors' Cataracts?

By Nancy French
And John P. Hebert
CW Staff

NEW YORK — Two copy editors who work for *The New York Times* were diagnosed as having cataracts after the newspaper switched to electronic editing and typesetting — a change that put the two in front of CRTs all day.

Both editors, who are in their 30s, suspect radiation emitted from the CRTs is to blame.

Cataract victims average 60 years of age, according to Dr. Edward Murphy Jr., a Boston opthalmologist affiliated with the Massachusetts Eye and Ear Infirmary who also teaches at Harvard Medical School.

The disease, which clouds the normally transparent lens of the eye and eventually causes blindness, can be corrected surgically by removing the lens and then adjusting vision with contact lenses and/or thick glasses.

Murphy said the disease is so unusual in people as young as 30 or 35 that when he finds such a case he usually looks for "some systemic disease such as diabetes."

Dr. Milton Zaret of Scarsdale, N.Y., an ophthalmologist and authority on the effects of radiation on the eye, said radiation could be to blame. Zaret was called in on the case after the Newspaper Guild of New York AFL-CIO intervened on behalf of the two copy editors.

At first *The Times* took the position that there was no connection between use of the CRTs and the two cataract diagnoses and that the men probably had cataracts before they began working on the CRTs. But 50 copy editors at *The Times* weren't so sure.

These editors signed a petition asking for an inquiry.

The Newspaper Guild asked the Manhattan Federal District Court to grant a temporary restraining order to take the two editors off the CRTs until new tests could be done.

Judge Thomas P. Griesa ruled the dispute should be settled through arbitration. A panel was selected and at the moment a representative sample of the machines in use at the newspaper is being tested for radiation "by an independent party," according to Harry Fisdell, vice-president of the guild.

Research done to date on the cataract-radiation problem is inconclusive. A study released May 13 by the National Institute of Occupational Safety and Health (Niosh) of Cincinnati stated that CRTs do not emit enough nonionizing radiation to pose an occupational hazard.

The study did acknowledge both copy editors have the type of cataracts "compatible with those reported from exposure to radiant energy."

However, the Niosh report has "fatal flaws," according to Zaret. Further, neither of the two men has "any significant medical history that would lead to the development of cataracts," he said.

Zaret, who has spent 20 years studying the effects of radiation on the eye, said the problems with color TV sets — which also contain cathode ray tubes — have been resolved, but CRT terminals are a "totally unexplored area."

"Deflection coils" which deflect the electronic beam onto the screen "create electromagnetic radiation as well as nonionizing radiation." These could produce cataracts, he said.

The terminals in use at *The Times* are largely Harris Corp. H-1520 CRTs, which create characters using a dot-matrix display, according to Gordon Kilgore, program manager for Harris' Composition Systems Division.

Nearly 1,000 of these terminals are now in use all over the world, Kilgore said, and no problems like this have ever been reported before.

Antidote For Data Base Disease

Data base management systems without good systems management, in actual practice, are often unmitigated disasters.

by Kenneth T. Orr
Contributing Editor

It is not immediately obvious why data base management systems should have become so popular to the data processing profession. If one believes some of the published reports, data base systems are very expensive; they take up large amounts of resources, namely, personnel, computers and time; and they usually require a great many applications to justify their initial costs.

To be perfectly honest, the primary reason data base management systems are currently in vogue seems to be that they sell computer hardware. They don't sell them directly, of course, since very few of the cost projections for implementing a data base software package truly cost out the ultimate impact of the data base software on the operation involved. But sooner or later, in order to support the very growing appetite of the data base system for CPU cycles and disk storage, their owners are forced, much like the proud possessor of a baby alligator, to increase their maintenance budget or face an unpleasant hungry pet.

And there are other, organization-related, problems associated with data base management systems. For example, if you read the job description of the average data base administrator, you begin to suspect that the only person in the universe that could fill the requirements wears a blue jumpsuit with a big red "S" on the front. This creates a perplexing situation for management. In one breath, you read where the data base administrator is critical to the installation of a "true data base environment," and in the next you are told that the job of the data base administrator is an impossible one.

By this time, I bet you expect me to tell you that data base systems are doomed and that it's all a plot by the hardware manufacturers to unload large amounts of computers on an earnest but not too clever public. Well, I'm going to surprise you. I like data bases, even though I find that most organizations starting to develop a data base begin on the wrong foot. I think data bases are necessary, even critical to long term success of information management. But I also feel that without good systems management, in actual practice they are often unmitigated disasters.

For the most part, "data base" is simply a term that has been corrupted. Unfortunately, it has come to mean some mystical set of computer-oriented software which maintains large amounts of interrelated data on the computer.

(See Figure 1.)

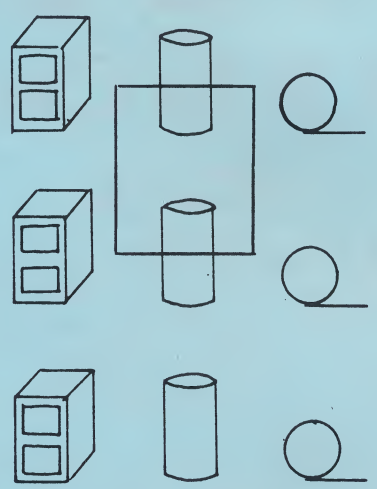
Data base is a concept

But a data base is not software; it is really only a concept, a way of looking at data. And rather than being a radical new concept, it is a radical old one. In fact, if you have a system today, you also have a data base. However, you probably are not managing it. All of the data that you have within the system to produce the correct output can be thought of as a data base. But because of problems in definition, we have come to consider a data base only as some kind of monolithic "monster" file and any set of old-fashioned (See Figure 1) files a sort of "non-data base."

As with most good ideas, the data base as a collection of the organization's data has become confused with the software which manipulates the data. This is unfortunate, for the greater part of any organization's data usually resides outside the computer altogether. And a true data-based systems approach would consider all of the data in the organization as part of the data base, to be managed, updated and maintained. (See Figure 2.)

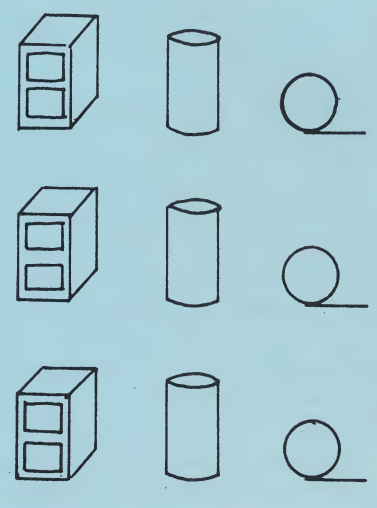
Why the current interest in data base anyway? Well, after a couple of decades of systems building, our past mistakes have begun to catch up with us. We now have large numbers of systems which are more or less out of control. And most of our systems have reached the stage of development where we can clearly recognize the problems involved in any future changes. In many places, data base management has been seen as the answer to all the organization's data processing problems, i.e., mainte-

Figure 1



The data included under the data base management system

Figure 2



The data covered under data based thinking

nance, flexibility and increasing information requirements. This is often wishful thinking; unless you change the systems development process to make data base thinking an integral part, it is unlikely that installing a data base management system will do much more than make things worse.

It is more or less a truism that the organizations which made the best use of the computer were also the ones that had the best manual and punched card systems to begin with. You might be tempted to say that breeding counts. Organizations which have a strong respect for systematic operations seem to be able to apply that knowledge at each stage of development. The same is definitely true of data base management systems. Those organizations which are the most successful with data bases are largely those which already have a solid systems building process to work with.

But organizations in real trouble are among the most likely to see data base management as a cheap way out of their problems. A good many organizations grasp at data base management systems to save them, much as a drowning man grasping at straws. But it is precisely in these cases that data bases are most likely to fail. As a matter of fact, so will anything else, except divine intervention.

I have a strong suspicion that somewhere there is at least one organization making excellent use of every one of the major data base management packages. And I would bet even money that somewhere out there, there is an organization having monumental problems with every single one of the major data base systems also. There are good and better data base systems, but the real secret of success in utilizing a data base seems to lie in the systems management of the organization seeking to use data base concepts.

Part of the difficulty involved in using data base concepts is the mythology surrounding the area. Because of some simple misunderstandings, many organizations take their eyes off the fundamental problem of systems development and performance in attempting to come to grips with the complexities of data base administration. This is a mistake. For a data base is simply the aggregation of the data requirements of a number of application systems. Because a data base exists to aid in the production of useful output, and because data which is not used cannot be correct, there is no such thing as an integrated data base without integrated application systems.

The data processing universe revolves not around the data base, as some would have you believe, but rather around the outputs that our application and management systems are called upon to produce. In far too many organizations, the building of a total corporate data base has become the "Bermuda Triangle" where one project after another is lost without a trace.

What the world needs is not better data base software, though heaven knows that would certainly help; no, what we need is serious application of structured data based thinking. We have found that when organizations develop correct approaches to defining systems, they get a good data base design as a by-product. Recently, the heretofore separate worlds of data base design and systems theory have begun to come together.

"Data" and "procedure," we find, simply represent different aspects of the same reality. What we learn in one area of systems or data base research can be carried over directly into the other. Indeed, when we concentrate on doing the right things in the right sequence, we are usually surprised to find that all sorts of good things happen to us. We come up with simple workable systems and elegant, efficient data base designs, too. But the parts of the systems problem, procedure and data, exist together, not separately. Neither can be developed independently, and neither can function alone.

Mirroring reality

Ultimately, form follows function. Our data bases and our systems must mirror reality. Because of physical limitations, that mirroring will always be an approximation of the real world. However, if our data bases are not organized to make them deal with the real world of the organization, they will hinder rather than help us.

In the past few years, we have begun to see the impact of "data structured" systems design at the programming level and at the systems level. We now see the impact that "structuring data" is apt to have throughout our organizations. A logical systems and data base design represents a major breakthrough. The same tools which are helping us attack complexity in programming and systems design are now beginning to have a significant impact on the design and development of integrated data bases as well. "Structured data bases" are a natural outcome of "structured" systems design.

Future articles in this series will cover the application of structured systems design tools to "logical" and "physical" data base design. □

Editor's note: This article was originally prepared by Mr. Orr for the Second Annual Structured Systems Design Conference and was published in its copyrighted proceedings.

ON LINE TO WASHINGTON

WITH ROGER H. ALLEN

A stand on standards

A. G. W. (Jack) Biddle, president of the Computer and Communications Industry Association, doesn't fool around. Perceiving a problem, he quickly develops a solution. More often than not, it's controversial. Take the question of how standards are set --- or, really, aren't set --- in the computer/communications industry.

Early this year, Biddle complained that standards development "has been marred by generally uninspired thinking, selfish corporate interests and incessant foot dragging (by) the larger, established suppliers." So he suggested a federally chartered standards board -- for the electronic funds transfer area. Chiding the Federal Government for "never really" encouraging data processing standards development, Biddle pointed out that: "It has been ten years since the Brooks Bill became law; yet there are still no meaningful hardware -- and relatively few software -- standards for ADP equipment." The result, Biddle scowled: "Untold millions of tax dollars have been wasted because of the inability to freely shift peripheral equipment and software within the federal ADP inventory. There are still no mechanisms in GSA, OMB or NBS to facilitate the adoption of ADP standards, and, until Congress provides these, our government will continue to waste our taxes."

Flak for S. 825

Now, some seven months later, Biddle's basic suggestion has been written into a proposed law: S. 825, the Voluntary Standards and Accreditation Act of 1977. Sponsored by James Abourezk (D-SD), the bill goes far beyond EFT standards. And it's getting a lot of flak from the American National Standards Institute (Ansi), the Computer and Business Equipment Manufacturers' Association (Cbema) and the American Society for Quality Control (ASQC).

Essentially, the bill would set up an independent, government-financed National Standards Management Board and a new, NBS-based Institute of Standards and Accreditation (ISA). Both, presumably, would replace Cbema and ASQC as the Ansi secretariats for standards-setting. The bill vests overall standards-making responsibility in the Secretary of Commerce, giving the ISA power to set standards if private organizations fail to do so.

Biddle bites

Testifying before the Senate Antitrust and Monopoly Subcommittee, Biddle cited many of the problems he criticized when, before S. 825 was written, he first proposed a new standards procedure. In the computer/communications industry, Biddle admitted, "We have numerous standards dealing with how a magnetic tape reel should be labeled...as well as standard numerical designations for cities." But, he complained, "We do not have standard higher level computer languages"

that permit program interchangeability. Also absent, he argued, are standards for "the efficient high-speed usage of computer/communications networks" and for the interconnection of hardware and software units which comprise a computer system.

Pointing the finger

At fault, Biddle insists, is the voluntary standards-setting procedures used now. And he finds five bugaboos: Voluntary standards bodies act only in their own self-interests. Industry giants dominate the standards process because participation in it is too expensive for smaller producers. Consumer or general-interest participants, lacking technical expertise, are at the mercy of representations made by the suppliers. The "inordinate time required to reach a consensus" among participants means that voluntary standards lag technicological developments. Suppliers resist standards which, they fear, might restrict available design options or disclose product and marketing strategies.

Getting more specific, Biddle contends that "voluntary standards activity...has been carried out under auspices and control of the trade association (Cbema) which represents IBM and the other systems competitors." He also points out that Ansi gave up after five years of working on a standard for interconnecting peripheral equipment with host computers. Then, after several CCIA member companies spent four years and $350K trying to get the project moving again, Biddle says, "it had become patently clear that the systems suppliers were not working on a good-faith basis toward development of a neutral standard that would benefit both users and providers." (Now, Ansi is circulating a proposed standard for public review. But it's the de facto IBM standard. And it's getting lots of heat from systems suppliers.) Biddle further zings the present system by pointing out that the NBS took "little initiative" to promote interconnection standards for peripherals despite a ten-year-old legislative mandate (under PL 89-306, the Brooks Bill) to do so.

Rebuttal's off the bull's eye

Interestingly, in their opposition to S. 825, Ansi, Cbema and ASQC never refute Biddle's charges directly. Ansi Executive Vice President Donald I. Peyton says present laws "are totally adequate to provide oversight for voluntary (standards) activity." Robert W. Shearman, ASQC executive director, says "The present voluntary consensus standards system works as a fair and equitable arena for commercial product and service standards." Improvements don't need more federal law, he says. ASQC contends S. 825 would cost three times more than the present system. Cbema President Peter F. McCloskey argues that voluntary standards practices have "operated successfully for over 75 years". To Cbema, the bill is "premature and unwarranted."

S. 825 is due for a Subcommittee vote probably next month. Then it goes to the full Judiciary Committee. Meanwhile, Jack Biddle is perceiving other problems -- and solutions.

Model-Building Game

Econometrics Gains Many New Followers, But the Accuracy of Forecasts Is Unproven

By Lindley H. Clark Jr.
Staff Reporter of The Wall Street Journal

A century and a half ago, Antoine-Augustin Cournot, a French economist and mathematician, mused about a system of equations that would explain all the interworkings of the economy and thus help to forecast the future. Alas, he concluded, such a system was beyond human powers.

Today, however, many economists are relying heavily on such equations in a popular (if unproven) process called model building, or econometrics. Using past relationships among factors affecting the economy —population, weather, wars, government policies—the economists set up the equations to try to predict trends.

Although there isn't any solid evidence that model building produces much better predictions than any other forecasting method, businessmen in the current uncertain economy are highly curious about the future and how to plan for it. And they are relying more and more on econometrics.

A Boom for the Specialists

The result has been a business boom for the small group of economic consulting firms using econometrics. Among them:

—Data Resources Inc. of Lexington, Mass., the only publicly held consulting firm. It reported net income of $1.5 million last year, an increase of 70% from the year before.

—Wharton Econometric Forecasting Associates, a nonprofit company owned by the University of Pennsylvania. It has more than 200 clients, double the number four years ago. It is actively adding to its services, according to F. Gerard Adams, treasurer, "so that we'll match Data Resources line for line."

—Chase Econometric Associates of Bala Cynwyd, Pa., a subsidiary of New York's Chase Manhattan Bank. It has built its client list to more than 600, with some firms paying annual fees as high as $50,000.

—Merrill Lynch Economics, an affiliate of the brokerage firm of Merrill Lynch, Pierce, Fenner & Smith, today will demonstrate its new econometric modeling system at a luncheon at New York's World Trade Center. "We're launching ourselves full-scale into the econometric area," Albert H. Cox Jr., president of the affiliate, says. Among other things, Merrill Lynch will make a 400-equation model of the economy available to clients through two computer time-sharing services.

The Role of Computers

For better or for worse, computers have played a large role in the growth of econometrics. For one thing, they have made it possible for econometricians to handle much larger models of the economy, solving hundreds of equations in a short space of time.

In addition, clients of the major consulting services now often have computer terminals in their offices. By tapping the proper keys on the terminal, a client can call forth current economic data from a computer storage center. Or he can "run" the model himself.

Because no equation can be solved if it contains nothing but unknowns, the client, like the econometrician, has to make some assumptions—about government tax policy, for example. The client, in fact, can make a variety of assumptions, playing what the econometricians call "what-if" games.

Data Resources Inc., the largest of the consulting firms, saw the lure of computers from the start, leasing its own equipment. It also invested manpower and money in building up a huge "data bank," a collection of constantly updated economic statistics.

A Lure for Clients

As a result, Data Resources has been able to sign up many clients who wouldn't have been attracted merely by the economic analyses of its president, Otto Eckstein, the Harvard economist and former chairman of the President's Council of Economic Advisers. One Data Resources client, for instance, is New York's Citibank, which has its own large economics department.

According to Charles Warden, Data Resources vice president, the firm, founded in 1969, "turned its first profit in February 1971, and we haven't looked back." When the firm first offered stock to the public last fall, it reported that its profits had risen substantially each year since 1971.

When the first econometric forecasting group was set up at Wharton in 1963, its model was solved with mechanical calculators, not computers. After Data Resources started, Wharton put its model on the Data Resources computer system—but it soon decided there were disadvantages in having a competitor market its model.

In 1973, Wharton signed a contract with Boeing Computer Services, a subsidiary of the airplane manufacturer; Boeing now offers Wharton's models and data to clients. The major model of the U.S. economy, which is used to make quarterly forecasts, has since been supplemented by a long-term model, an agricultural model, foreign models and other services.

Emphasis on Research

As befits an affiliate of a major university, Wharton has always put strong emphasis on pure research. "We aren't as aggressive as a profit-seeking corporation," Mr. Adams says. "But we operate in a profit-seeking environment, and we act accordingly." One indication: The firm is steadily absorbing more space in the university building where it is located; a large conference room once used to present the quarterly forecasts, now holds the desks of five economists.

The models and data of Chase Econometric Associates are made available to clients through computer terminals offered by two time-sharing firms: ADP Network Services of Ann Arbor, Mich., and Interactive Data Corp. of Waltham, Mass. "If one system should go down, the other one is always available as a backup," the firm tells pro-

spective clients in a brochure.

Merrill Lynch Economics will work through Interactive Data and National CSS Inc., of Norwalk, Conn. Merrill Lynch Ecoomics recently hired two men from Data Resources to help to beef up its econometrics capability—Gary Ciminero and Dick Hokenson.

Most of the other major consulting firms so far are holding back from a full commitment to econometrics and computers. But business at most firms still seems to be good, although they don't disclose financial results. It's evident, for example, that Townsend-Greenspan & Co. expanded its activities even while its president, Alan Greenspan, was away serving as President Ford's chief economic adviser.

Results Are Unspectacular

But Townsend-Greenspan and nearly all other consultants now use econometrics to some extent. The attractions of the system don't stem from a spectacularly successful forecasting record; like other forecasters, econometricians have had their troubles in recent years.

Since 1968 the American Statistical Association and the National Bureau of Economic Research have been jointly collecting forecasts from a panel of business economists—some who used econometrics and some who didn't. In 1975 Vincent and Josephine Su, two National Bureau economists, presented an evaluation of the forecasts in the bureau's publication, Explorations in Economic Research.

The conclusions didn't offer any comfort to anybody. "No method predicts consistently better or worse than other methods, and no method predicts consistently better in levels or in changes," the researchers said. They also compared the two associations' forecasts with those produced by the Wharton econometric model. The conclusion: There isn't any clear evidence that the associations' forecasts are any better—or any worse.

"Half Magic"

As business expands, the econometricians are trying hard to explain to new clients that their models aren't a magic solution to all business problems. Michael K. Evans, president of Chase Econometric Associates, says he tells his clients that "my forecasts are about 50% my judgment and about 50% model."

"The unfortunate thing about forecasting is that the future remains the future," Mr. Adams of Wharton says. "What we do is half magic, half science. Science is concerned with the past. When you get into the future, it's part magic."

In analyzing the workings of the economy and setting up equations to portray them, the econometricians have to rely on the ways the economy has worked in the past. Unfortunately for forecasters, the economy doesn't always continue to work in precisely the way it did in the past.

Despite the undistinguished forecasting record, it is hard to find many economists who will knock econometrics. A. Gary Shilling, director of White Weld Economic Services, uses econometrics in only a limited way. But he stresses that it is good for simulations, for the "what-if" games. An econometric equation gives a logical structure of economic relationships. Using such equations "assures an internal consistency" in your forecasting, Mr. Shilling says.

Econometricians have helped to expand the market for their products by bringing them doown closer to the level of the people actually running business corporations. "In the beginning," Mr. Evans recalls, "all we had was a large model of the U.S. economy. Now we're making regional and industry forecasts, and we can help companies forecast the markets for their own products."

Both Chase and Data Resources now are forecasting foreign-exchange rates. Charles Warden, vice president of Data Resources, says, "Our exchange-rate forecasts are accepted because they're useful. They may not always be exactly on target, but they point to the turns and the magnitude of the changes."

Computer Show's Message: 'Be the First on Your Block'

By LEE DEMBART
Special to The New York Times

BOSTON, Aug. 25—The computer revolution seems endless. Every six months, a new product comes along that outdates everything before it. The latest is the microcomputer, based on the same technology as the pocket calculator but capable of putting a powerful computer into homes and small businesses.

Several thousand people, many of them students or businessmen, turned out here today for "Computermania," a major exposition of microcomputers carrying price tags of $300 to $3,500. The displays were extensive, the exhibitors excited and the computer enthusiasts eager to study everything new.

Limited Only to Imagination

But no one could say for sure why people might need a computer at home. "For fun" seemed the most honest answer. Some manufacturers said a home computer could balance a checkbook, although a $15 calculator could do the same thing. The personal computer seems to be a spectacular toy in search of a use.

"Sometimes it is difficult to explain to somebody what they need it for just as it would have been difficult to explain to someone in 1850 what they needed an automobile for," said Dave Armitage, president of Computer Power Inc. of Warwick, R.I., who was demonstrating a Sol terminal computer. "The uses of a machine like this are limited only to the user's imagination."

At another booth, Steve Jobs was demonstrating the Apple II computer, which is the size of a portable typewriter and hooks up to a regular television set. It plays games, displays color graphics or does sophisticated mathematics. Mr. Jobs suggested that amateur radio operators could use the $1,300 device to figure frequency skips and that investors could use it to ch and that investors could use it to chart stock prices or do commodity spreads.

A Keyboard and Power Chip

But, Mr. Jobs agreed, "most people are buying computers not to do something practical but to find out about computers. It will be a consumer product, but it isn't now. The programs aren't here yet."

On the outside, all of the personal computers have a keyboard, much like those of a typewriter, and a display screen or a capability for attaching to one. Inside, their key element is a micro-processor chip that is a computer on a piece of silicon a quarter-inch square. The chip has the power of the original Eniac computer of 1949, which took up a city block.

Three years ago, there were no microcomputers. People who wanted computers at home had to rent or buy a terminal and plug in to a large computer somewhere, frequently at a university, where they would be one of a hundred other users in a time-sharing network.

"Compared to time-sharing, the microcomputer is very, very powerful," said Gordon Stitt, who was demonstrating the IMSAI system, 10,000 of which have been sold in the last year and a half.

The only thing that big computers do better than microcomputers is a lot of arithmetic. By computer standards, microprocessors are slow at math, capable of doing several hundred additions a second as against hundreds of thousands by the big ones.

Small Business Market

The personal computer industry, which is estimated to total $30 million a year (up from $5 million two years ago) thinks its biggest market today is not the home hobbyist but thesmall business with sales of $250,000 a year or less. Up to now, computer time was too expensive for such enterprises.

"It used to be hobbyists," said Alan Hald, owner of the Byte Shop of Tempe, Ariz., which calls itself the affordable computer store. "Now it is more personal business users."

Ervin Fraser, a data processing manager in Boston, said hecame to the show today to see what innovations there had been. "You go away for three months and come back, you find things you never heard of before," he said.

A 19-year-old junior at the Massachusetts Institute of Technology, Manuel Ulloa, said he planned to buy a personal computer because, "you can take it in your room and turn the lights out."

"If you invert a matrix on a big computer, that's nothing," Mr. Ulloa said. "But if you add two plus two on your own computer, that's something."